

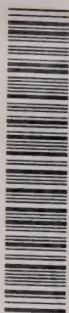
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THE 1986 ONTARIO SURVEY OF NIGHTTIME DRIVERS



Ontario

INTERMINISTERIAL COMMITTEE
ON DRINKING - DRIVING

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THE 1986 ONTARIO SURVEY OF NIGHTTIME
DRIVERS - SUMMARY REPORT

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Abstract

This research was sponsored by the Ontario Interministerial Committee on Drinking and Driving which was comprised of representatives from the Ministries of Transportation and Communications, the Attorney General, the Solicitor General, and the Addiction Research Foundation.

The objectives were to provide comparative data to assess any changes in summer nighttime drinking and driving patterns which may have occurred since the previous survey in 1979. Another objective was to evaluate the effectiveness of recent drinking/driving legislation and countermeasures. The survey was also to contribute Ontario data to a national survey on drinking and driving and provide baseline measures for the assessment of future countermeasures. Additional driver demographic data was collected as well as data on trip lengths and origins, and seat belt usage.

The survey was conducted between May 28 and July 18, 1986 on Wednesday through Saturday nights between the hours of 21:00 to 3:00. Each site was sampled for one and a half hours, for one night only. In all, 298 sites were sampled from across the province including both rural and urban locations. Whenever possible the same sites used in 1979 were used again in 1986. In the cases where a 1979 site could not be used, a new site was selected as close as possible to the original.

Drivers were selected from passing traffic by a police officer and directed onto the site where a Ministry of Transportation and Communications survey technician administered a 2-3 minute questionnaire concerning various aspects of the trip, and collected a breath sample.

Of the drivers stopped during the survey, 73% were male and 26% were female (the remaining 1% were unclassified). Almost one half of the drivers stopped were between 16 and 30 years old. Another third were between 30 and 50 years old.

The majority of the drivers stopped were driving passenger cars (86.8%). Light trucks or vans accounted for 10.6%, and 2.4% were motorcycles. Commercial vehicles and buses were not stopped.

Of all drivers stopped, 1.7% did not take part in the interview. Another 3.4% refused or were unable to provide a breath sample. In total, 5.1% did not participate in some part of the survey. A limited analysis on these data suggested that non-responding drivers may have been more than nominally different from those who participated in the study. Of the 12,125 drivers who participated in the survey, 10.9% had a blood alcohol content (B.A.C.) between 20 and 50 mg% as measured by the ALERT model J4. Another 3.2% had a B.A.C. between 51 and 80 mg%. A further 5.5% percent had a B.A.C. in excess of 80 mg%.

The highest percentage of drivers found to have B.A.C.'s over 80 mg% was on Thursday and Friday nights, each with 6.0%. This was followed by Saturday with 5.4% and Wednesday with 4.7%. The percentage of impaired drivers increased as the hour got later. Between the hours of 1:30 and 3:00 12.8% of drivers blew in excess of 80 mg% B.A.C.

The highest percentage of impaired drivers were the 25 to 29 year olds and 35 to 39 year olds. The percentage of impaired drivers increases in a linear fashion from age 16 to 24 years old.

The percentage of impaired males was 6.3%, and females 3.3%. This sex difference is more pronounced as the age of the driver increases. Drivers in the nighttime survey were questioned concerning the particular trip that they were making when stopped for the survey. The majority had come from their own or a friend's or relative's home, independent of whether they had been drinking. Drivers who said they had been drinking, were also asked where the drinking had taken place. The two most common locations were private homes and bars or taverns.

Approximately 50% of drivers stopped felt that there was less than a 1 in 10 chance of an impaired driver being stopped by the police.

Many drivers were unable to accurately assess their B.A.C. relative to the legal limit. Many drivers believed they were over 80 mg% when they were under and vice versa. A surprising percentage of drivers identified themselves as impaired, yet still drove a vehicle. It is not clear whether they actually considered themselves impaired when beginning the trip, or the act of being in the survey caused them to consider the issue and then decided they may be impaired.

During the 1979 survey 9,745 drivers were stopped and 6.6% were found to be in excess of 80 mg%, compared with 5.5% of the 12,125 drivers stopped in 1986. The data from this survey suggests that summer nighttime levels of impaired driving have significantly decreased from that found in 1979. This interpretation is consistent with a reduction seen in the number of alcohol related charges and accidents.

These results point out the value of this type of data collection. Only the gathering of onroad information can allow for development of risk of accident indicators, and aid in our understanding of the drinking/driving issue.

Résumé

Cette étude a été parrainée par le comité interministériel de l'Ontario sur la conduite en état d'ivresse formé de représentants des ministères des Transports, du Procureur général et du Solliciteur général et de la Fondation de recherche sur la toxicomanie.

Les objectifs étaient de recueillir des données comparatives afin d'évaluer les changements de comportements relatifs à la consommation d'alcool pendant les soirs d'été survenus depuis l'étude de 1979. Cette étude avait également comme but d'évaluer l'efficacité des diverses mesures récentes adoptées pour lutter contre la conduite en état d'ivresse. De plus, l'étude visait à fournir des données recueillies en Ontario pour l'enquête nationale sur la conduite en état d'ivresse et à établir des critères de référence en vue de l'évaluation de nouvelles contre-mesures. Des données démographiques sur les automobilistes ont également été recueillies de même que des renseignements sur la durée de leurs déplacements, leur point de départ et sur le port de la ceinture de sécurité.

L'étude a été effectuée du 28 mai au 18 juillet 1986, du mercredi au samedi soir entre 21 h et 3 h. Des contrôles intermittents ont été effectués le soir à chaque endroit pendant une heure et demie. Au total, 298 endroits partout en Ontario ont fait l'objet de ces contrôles, tant en milieu rural qu'en milieu urbain. Dans la mesure du possible, les mêmes endroits que ceux de l'étude de 1979 ont été utilisés. Si cela s'avérait impossible, un autre endroit aussi ressemblant que possible a été choisi.

Les agents de police ont interpellé des automobilistes au hasard parmi la circulation et les ont dirigés vers un endroit déterminé où un technicien du ministère des Transports leur a demandé de répondre à un questionnaire d'une durée de 2 à 3 minutes portant sur divers aspects de leurs déplacements et a prélevé des échantillons d'haleine.

Parmi les automobilistes interrogés, 73 % étaient des hommes et 26 % des femmes (l'autre 1 % n'a pas été classé). Près de la moitié des automobilistes étaient âgés de 16 à 30 ans et un tiers de 30 à 50 ans.

La majorité des automobilistes conduisait des voitures particulières (86,8 %), 10,6 % de petits camions ou des fourgonnettes et 2,4 % des motocyclettes. Les véhicules utilitaires et les autobus n'ont pas été arrêtés.

De tous les automobilistes arrêtés, 1,7 % n'ont pas participé à l'entrevue et 3,4 % ont refusé ou étaient incapables de donner un échantillon d'haleine. Au total, 5,1 % n'ont pas participé en partie à l'étude. Une analyse limitée de ces données indique que les automobilistes n'ayant pas participé à l'étude ont peut-être été plus que nominalement différents de ceux qui y ont participé.

Des 12 125 automobilistes ayant participé à l'étude, 10,9 % avaient un taux d'alcool dans le sang entre 20 et 50 mg %, tel que mesuré par l'ivressomètre ALERT modèle J4, 3,2 % entre 51 et 80 mg % et 5,5 % supérieur à 80 mg %.

Le plus fort pourcentage (6 %) d'automobilistes ayant un taux d'alcool dans le sang de plus de 80 mg % a été relevé les jeudi et vendredi soir. Les autres soirs où une forte proportion d'automobilistes avaient un taux aussi élevé sont le samedi (5,4 %) et le mercredi (4,7 %). La proportion d'automobilistes dont les facultés étaient affaiblies augmentait avec l'heure tardive. Entre 1 h 30 et 3 h, 12,8 % des automobilistes avaient un taux d'alcool dans le sang supérieur à 80 mg %.

La majorité des automobilistes en état d'ivresse étaient âgés entre 25 et 29 ans ou entre 35 et 39 ans. Le nombre d'automobilistes conduisant avec des facultés affaiblies est proportionnel à l'âge entre 16 et 24 ans.

On a constaté que 6,3 % des automobilistes conduisant en état d'ivresse étaient des hommes et 3,3 % des femmes. Cette différence entre les sexes s'accroît avec l'âge.

Les automobilistes ont été interrogés au sujet de la nature de leurs déplacements le soir de l'étude. La plupart venaient de quitter leur domicile ou celui d'un parent ou d'un ami, qu'ils aient bu ou non. Les automobilistes qui ont admis avoir consommé de l'alcool venaient pour la plupart de quitter leur domicile, un bar ou une taverne.

Environ 50 % des automobilistes interrogés ont déclaré que selon eux il y avait moins d'une chance sur dix qu'un conducteur en état d'ivresse soit arrêté par la police.

Bon nombre d'automobilistes ont été incapables d'évaluer leur taux d'alcool dans le sang en rapport avec la limite légale. Bien des automobilistes croyaient avec erreur avoir dépassé les 80 mg %. Un nombre étonnamment élevé d'automobilistes ont déclaré qu'ils conduisaient sciemment avec des facultés affaiblies. On ne sait pas vraiment s'ils se croyaient en état d'ivresse lorsqu'ils ont pris le volant ou si le fait d'être interrogés dans le cadre de cette étude les ont amenés à songer à la question et à se déclarer être en état d'ivresse.

Au cours de l'étude de 1979, 9 745 automobilistes avaient été interrogés. De ce nombre, 6,6 % avaient un taux d'alcool dans le sang supérieur à 80 mg %, comparativement à 5,5 % des 12 125 automobilistes interrogés en 1986. Les données recueillies lors de cette étude indiquent que le nombre d'automobilistes en état d'ivresse pendant les soirs d'été a baissé considérablement depuis 1979. Ces constatations correspondent à la baisse du nombre d'accidents impliquant un automobiliste en état d'ivresse et du nombre d'inculpations portées pour cette infraction.

Les résultats obtenus démontrent l'importance de ce type d'étude. Ce n'est qu'au moyen de contrôles routiers intermittents que nous pouvons concevoir des indicateurs des risques d'accident et améliorer notre compréhension de l'ivresse au volant.



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INTRODUCTION

In 1974 and 1979 surveys of nighttime drivers were conducted in Ontario. The 1974 survey was a Canada-wide study carried out by Transport Canada. In 1979, the province of Ontario conducted a survey of nighttime drivers to determine, among other things, the number of drinking drivers on the roads in Ontario and their blood alcohol concentration (B.A.C.). The information gathered was used as a basis for both the development and assessment of various countermeasures.

The 1979 survey was organized by the interministerial committee on Drinking and Driving consisting of representatives from the Ministries of the Attorney General, Solicitor General, Transportation and Communications¹, and from the Addiction Research Foundation.

In 1985, Transport Canada's Road Safety Directorate offered to work with the provinces to again conduct a national survey of nighttime drivers in 1986-87. In the spring of 1986, Ontario reconvened its interministerial committee, with the same Ministries being involved as in 1979.

A consultant, Hieatt & Associates, was contracted by Transport Canada to assist each of the participating provinces. The consulting firm was experienced in conducting surveys of this nature. Transport Canada also offered to provide assistance in site selection, developing sampling strategy and training requirements. In addition they were to complete the data processing and analyze the resulting statistics.

The actual field work was conducted by Ministry of Transportation and Communications (M.T.C.) staff trained in survey

techniques. The Ministry of the Solicitor General, through the Ontario Provincial Police (O.P.P.), Ontario Police Commission (O.P.C.) and municipal police forces provided police officers to participate in control of the survey sites. The role of the Addiction Research Foundation and the Ministry of the Attorney General was to assist in developing a survey instrument and provide advisory support to the Committee.

The survey took place between May 28, 1986 and July 18, 1986. Data were collected on 12,777 drivers of which 652 did not provide an adequate breath sample, and/or an interview, leaving 12,125 complete surveys.

SURVEY ORGANIZATION AND METHODOLOGY

Sampling and Site Allocation

The site plan was designed to be representative of the province as a whole, with sites distributed between urban and rural areas according to population. A site sampling plan had been developed for the 1974 survey. This had been followed with some modification in 1979. Therefore, for consistency, where feasible, the same sites were used again in 1986. To increase sample size, additional sites were surveyed, primarily in the north and east².

The plan was to survey regions within the province using clusters of 2, 8, 16 or 32 sites depending on population. This allowed four sites a night to be sampled by a crew of six survey technicians divided into two teams under the supervision of a crew chief. One team surveyed two sites each night.

The actual locations were chosen for suitability of the site i.e. ease of

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access, lighting, adequate parking space, access to telephone, etc. The direction of travel and general location were picked at random; however, sites were chosen directly before intersections, where possible, to minimize the likelihood of drivers deliberately turning to avoid the site.

The survey was conducted in the following locations (listed by provincial regions):

West

Chatham	16 sites
Sarnia	16 sites

West-Central

Owen Sound	9 sites
Kitchener	16 sites
London	16 sites
St. Catharines	14 sites
Hamilton	16 sites

Central

Mississauga	8 sites
York Region	8 sites
Toronto	32 sites

East-Central

Orillia	7 sites
Oshawa	14 sites
Peterborough	13 sites
Durham	2 sites

East

Kingston	15 sites
Ottawa	32 sites

North

Sudbury	16 sites
Sault Ste. Marie	15 sites
Kirkland Lake	8 sites
Timmins	8 sites
Thunder Bay	17 sites

Total 298 sites

maintain consistency with the other surveys, and to have postsecondary students available in the labour force, the 1986 survey was scheduled to start in mid-May and run for six weeks.

In 1986, there was more rain during this period than expected. It is considered an unsafe practice to conduct surveys during wet weather. Hence, the survey ran into the first two weeks of July to makeup individual survey sites that were rained out.

The sites were scheduled for Wednesday through Saturday nights. Wednesday and Thursday nights were monitored in order to evaluate drinking driving behaviour on nights that are not typically associated with heavy drinking. Friday and Saturday nights were monitored because they are considered the peak nights in which motor vehicle accidents occur and where increased drinking is believed to occur.

The hours of the survey nights were also kept consistent with the 1979 survey. The survey sampled drivers between the hours of 21:00 and 03:00. Each site was sampled for 1 1/2 hours for one night only. By allocating two survey teams to a geographical area, one team was able to sample a site then pack up their equipment and travel to their next site. While one team travelled, the other team was sampling at the second site in the area. (See Figure 1.)

This type of site planning also reduced the possibility of drivers becoming familiar with the site area, although in small towns and rural areas drivers could run into two sites in one night.

Survey Timing

As in the previous surveys, the survey period selected was late spring. This time of year was selected in order to reduce variations resulting from tourist influx and climatic extremes. Therefore, to

FIGURE 1TEAM ONE

21:00	22:30	Midnight	01:30
survey		survey	check
site 1	travel	site 3	work &
1-1/2		1-1/2	pack-up
hours		hours	

TEAM TWO

	22:30	Midnight	01:30	03:00
	survey		survey	check
	site 1	travel	site 3	work &
	1-1/2		1-1/2	pack-up
	hours		hours	

Development of Survey Questionnaire

The design of the 1986 Nighttime Drivers' Survey questionnaire was a collaborative effort between the various members of the Interministerial Committee. The Addiction Research Foundation and the Drinking/Driving Countermeasures Office provided questionnaire information and made particular requests for inclusion of specific questions. Also included was a core set of questions which was required to be compatible with Transport Canada's needs for the national survey. Particular stress was placed in ensuring drivers were aware that the survey was voluntary.

Pilot tests of the interview procedure and questionnaire were also conducted during the training period for field staff.

Survey Equipment and Site Management

The breath-testing equipment used in this survey was the ALERT (Alcohol Level Evaluation Roadside Tester) Model J4. This is a micro-electronic alcohol breath testing device, manufactured by Alcohol Countermeasure Systems Inc. Mississauga, Ontario. It is a handheld device which

allows a survey technician to administer a breath test to a driver and receive an immediate readout of the blood alcohol concentration (B.A.C.). Each ALERT unit was numbered and this was recorded on the interview sheet; therefore, the results from each could be checked if necessary.

The ALERT J4s were calibrated before every survey night to ensure accuracy in the readouts. When testing human subjects, the device is accurate within an error range of 20 milligrams of alcohol in 100 milligrams of blood (mg%). For the purposes of this survey, any person with a B.A.C. less than 20 was defined as non-drinking.

In Ontario, a measurement between 50-80 mg% could result in licence suspension of 12 hours, but is not a criminal offence. Over the 80 mg% limit is considered to be legal impairment.

To obtain a correct B.A.C. reading a driver has to blow into the ALERT unit moderately hard and continuously, until a reading appears on the unit. At this point the driver is told to stop blowing. The deep lung air which has been expired into the ALERT unit is analyzed and a representation of blood alcohol concentration appears in a numerical readout on the ALERT. If the driver fails to blow long or hard enough it results in an aborted test: thus false readings are prevented.

To obtain an accurate reading, drivers were asked to put out their cigarettes before an interview began to ensure no smoke would contaminate the test. If there was an indication that the driver had a drink within the last 10 minutes the survey technician would wait another 10 minutes before taking a reading to allow the residual alcohol in the mouth to dissipate.

to determine what they had learned through participating in the survey and to document their recommendations on improvements to the survey methods should a survey of this kind be conducted in future.

Driver Selection and the Interview

Police presence at the site consisted of two officers. One officer directed traffic onto the survey site, the other assisted vehicles back onto the road. Officers were asked to avoid interacting verbally with the drivers.

All vehicle selection was made by the police from passing vehicles as survey lanes became vacant. The vehicles selected were passenger cars, light trucks or vans and motorcycles. Other categories such as buses, large trucks or bicycles were not sampled. One officer was asked to provide a full traffic count to the crew at the end of each survey period.

When a driver entered a survey site, it was made clear to him/her by the interviewer that participation in the survey was voluntary. Survey technicians greeted the drivers, identified themselves as being from M.T.C., informed the drivers that they were conducting a voluntary nighttime drivers' survey and asked if the driver had any objections to participating in the survey. An affirmative answer had to be given for the survey to continue.

The standard introduction read:

Good evening sir/madam, the Ministry of Transportation and Communications is conducting a voluntary survey on nighttime driving. All your answers are confidential, you're under no obligation and we'd appreciate it if you would assist us with the survey. Is that alright?

If a driver did not wish to participate and was not obviously impaired, he/she was thanked and allowed to continue off the site. At this point 214 drivers (1.7%) refused to be interviewed. (See Table 7.)

With the driver's consent, the survey technician proceeded with set questions and asked for a breath sample. If the driver refused or was unable to provide a breath sample, and was not obviously impaired, the interview was terminated.

Of the 12,777 drivers surveyed, 438 (3.4%) did not provide a breath sample. Medical problems or unsatisfactory blows accounted for 45% of those not producing a B.A.C. reading. The reasons given by the remaining drivers who refused were: 16% gave 'civil rights' 11% the fear of prosecution, 7% were in a hurry and 2% cited language problems. (See Table 8.) When a driver consented to provide a breath sample and this was under 50 mg%, the driver was informed of his/her B.A.C., asked a few more questions, thanked for his/her participation and then allowed to proceed off the site.

If, however, a driver blew 50 mg% or over he/she was asked questions specific to any drinking that had been done that night. At the end of the interview the driver was informed of his/her B.A.C. and that this was over the limit which legally restricts driving. The survey technician then asked the driver not to drive away from the site until their B.A.C. went below 50 mg%.

Drivers over 50 mg% were given the option of switching drivers, providing the alternate driver provided a breath sample below 50 mg%. This method of proceeding with their journey was accepted by 20% of the drivers. Others chose to call a taxi or friend to provide a ride (20%) or walk

(24%). The highest percentage (26%) parked their cars and waited for their B.A.C. to drop (See Table 9).

Police were responsible for any cars left behind at the site or any impaired drivers that were still at the site when the operation closed down. Licence plate numbers of all vehicles that were parked at the site were recorded. This was to ensure that if a driver decided to leave before his/her B.A.C. was below 50 mg% there would be some way of identifying the vehicle once it left the site. The recorded plate numbers were not included with any data collected in the survey in order to maintain the confidentiality of information collected. Once a driver was able to leave the site the recorded plate number was erased. If a driver insisted on driving or became very belligerent, only then would the police intervene.

Data Quality and Control

Beginning in the training sessions, data quality was stressed. The project coordinator and survey supervisor travelled from site to site listening to the survey technicians as they conducted interviews to check that the questions were being asked correctly.

For each survey team, one survey technician was trained to check each questionnaire and to compile the data collection sheets for each survey night. The questionnaires were then reviewed by each crew chief before being sent from the field to M.T.C. Under the supervision of an M.T.C. liaison officer, the questionnaires were scrutinized yet again by a data quality control clerk who examined all the questionnaires from every crew.

If a significant and constant number of errors were being made by a particular survey technician or by an entire crew, then the data quality control clerk would telephone the field to discuss the errors, in order to prevent similar mistakes happening in future.

SURVEY RESULTS

GENERAL DESCRIPTION OF VEHICLES AND DRIVERS SURVEYED

Time Periods

The 1986 Ontario Survey of Nighttime Drivers was conducted between May 28 and July 18, 1986. The majority of drivers (65%) were interviewed in June with the remaining interviews conducted in May (20%) and in July (15%).

The interviews were conducted on Wednesday (24%), Thursday (23%), Friday (27%) and Saturday (26%). The distribution of drivers surveyed by time of day is shown in Table 1.

Table 1 Driver Selection by Hour

<u>Time</u>	<u>No. Selected</u>	<u>% of Drivers</u>
21:00-22:30	4005	31.3
22:30-24:00	3561	27.9
24:00-01:30	2949	23.1
01:30-03:00	<u>2262</u>	<u>17.7</u>
Total	12,777	100%

Locations

The sites were located beside highways with speed limits less than 50 km/h (68%), between 50-80 km/h (24%) and over 80km/h (8%). Sites were distributed among regions of the province and rural and urban areas according to population. The direction of travel and general location were picked at

random. In 1986, an effort was made to use previous survey sites from 1979 and 1974. The population of the site location is classified in Table 2.

Table 2 Driver Selection by Site Population

<u>Population</u>	<u>No. Selected</u>	<u>% of Drivers</u>
5-10 thousand	456	3.6
10-25 thousand	688	5.4
25-50 thousand	1649	12.9
50-100 thousand	2028	15.9
100 thousand plus	7111	55.7
Unclassified	845	6.6
	12,777	100%

There were 298 sites where an average of 44 interviews were conducted per site in the 1 1/2 hour period. The actual number of interviews ranged from a low of 9 to a high of 93.

Driver Selection

Male drivers continue to form the largest percentage of nighttime drivers. As shown in Table 3, of those 12,777 selected for interview 73% were male and 26% female. For the remaining 1.3% sex was not classified.

Table 3 Driver Sex by Day of Week
% Drivers

<u>Survey Night</u>	<u>Male</u>	<u>Female</u>	<u>by Night</u>
Wednesday	17.5	6.3	23.8
Thursday	16.6	6.1	22.7
Friday	19.8	7.2	27.0
Saturday	18.8	6.4	25.2
	72.7	26.0	98.7%

The driver's age groups were recorded in the categories shown in Table 4.

Table 4

Driver Age

<u>Age Group</u>	<u>No. Selected</u>	<u>% of Total</u>
(16-24)	(24)*	(0.2)
16-19	1408	11.0
20-24	2804	21.9
25-29	2146	16.8
30-34	1486	11.6
35-39	1295	10.1
40-49	1792	14.0
50-59	1039	8.1
60-69	476	3.7
70+	125	1.0
Refused	182	1.4
	12,777	100%

* Under 25 year olds were asked their exact age; however, 24 drivers would only categorize their age within a range.

Vehicles

The majority of drivers were in passenger cars or light trucks or vans (See Table 5.) Motorcycles were included in the sample and represented two percent of the vehicles. The 16-24 year olds comprise the highest percentage of motorcycle drivers with 58% of the total.

Table 5 Vehicle Type by Driver

<u>Vehicle</u>	<u>% of All Drivers</u>
Passenger Car	86.8
Light Truck or Van	10.6
Motorcycle	2.4
Other	0.1
Unclassified	0.1
	100%

Almost half the vehicles (48%) had only one occupant. A third (35%) had two occupants and the remainder had three (9%), four (5%) or more (2%). This data was missed in 1% of the interviews. In vehicles with one,

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two, three or four occupants, approximately 3% of each category had a driver with a blood alcohol concentration (B.A.C.) over 80 mg%.

Ninety-eight percent of vehicles stopped had Ontario licence plates, the rest were from other provinces (0.8%) and the U.S. (0.6%) or were missed.

Table 6 Age Group of Driver
 by Vehicle Type

<u>Age</u>	<u>Car</u>	<u>Van</u>	<u>Motorcycle</u>	<u>Total</u>
16-24	29.6	3.1	1.4	34.1
25-29	14.9	1.8	0.4	17.1
30-34	10.0	1.5	0.3	11.7
35-39	8.8	1.4	0.1	10.3
40-49	12.2	1.7	0.1	14.0
50-59	7.1	1.0	-	8.1
60-69	3.4	0.3	-	3.7
70+	0.9	0.1	-	<u>1.0</u>
				100%

Refusal to Participate

Of the 12,777 selected 214 (1.7%) refused to be interviewed. Table 7 shows frequency of reasons cited. The greatest number of drivers that refused (41%) said they were in a hurry. Others had problems with the English language(19%). Language appeared to be more of a problem in Ottawa than other areas. Of those who did refuse to be interviewed, the majority were let go; however, a few were persuaded by the survey interviewers to participate in the survey.

Of those willing to proceed with the interview, 438 then refused to provide a breath sample, or were unable to provide a satisfactory blow. The distribution of reasons recorded for the refusal are given in Table 8.

Table 7 Driver Refusal to be Surveyed

<u>Reason for Refusal</u>	<u>% of Selected Drivers Refusing</u>
In a hurry	41.1
Language problems	18.7
Did not state reason	16.4
Other reasons not listed	9.3
Not interested	7.0
Abusive, uncooperative	3.7
Against civil rights	1.4
Fear prosecution	1.4
Missed	<u>0.9</u>
	100%

Table 8 Breath Sample Refusal

<u>Reason for breath</u>	<u>% of Drivers sample not obtained</u>
Unsatisfactory blow	28.5
Medical reasons	16.4
Against civil rights	16.0
Fear of prosecution	10.5
In a hurry	6.6
Language problem	1.6
Other reasons not listed	14.8
Did not state reason	<u>5.5</u>
	100%

Outcome for Drivers Blowing Over 50 mg%

When a driver's B.A.C. was over 50 mg% it was the survey crews responsibility, aided by the police where necessary, to prevent the driver continuing their journey. If a driver chose to change position with a passenger that person's B.A.C. was also checked. Table 9 shows the percentage of drivers choosing each option. The number of outcomes recorded (1,111) is higher than original drivers over 50 mg% (1,063). This is due to the exchange driver also exceeding 50 mg%, therefore, also, asked not to drive.

Table 9 Outcome for Drivers Blowing
Over 50 mg%

<u>Driver Action</u>	<u>% of Drivers</u>
Waited, then let go	25.9
Walked	23.7
Swapped drivers	20.5
Used taxi or other ride	19.6
Other	3.2
Let go	1.4
Don't know, missed	<u>5.6</u>
	100%

BLOOD ALCOHOL CONCENTRATION RESULTS

The data from the breath samples taken in the survey indicate 80% of the drivers providing breath samples had B.A.C. readings of 20 mg% or less. It should be noted that the accuracy range for the ALERT J4 device used to administer the test is 20 mg%.

Of the remaining 20%, just over half (11% of the total) had a B.A.C. between 21 mg% and 50 mg%, that is they had been drinking, but might not be considered impaired.

Approximately 3% of the total blew between 50 mg% and 80 mg%, which would normally result in a licence suspension of 12 hours, but is not a criminal offence.

The remaining 673 drivers (5.5% of the total) were over the legal limit of 80 mg%. The categories for B.A.C.'s are listed in Table 10, showing both the actual numbers and the percentage of the total drivers who provided breath samples.

Table 10 1986 B.A.C. Distribution

<u>B.A.C. mg%</u>	<u>No. of Drivers</u>	<u>Drivers</u>
0-20	9,736	80.4
21-50	1,323	10.9
51-80	393	3.2
81-100	221	1.8
101-150	278	2.3
151+	<u>174</u>	<u>1.4</u>
	12,125	100%

5.5%

B.A.C. Distribution by Day and Time

The highest percentage of drivers found to be legally impaired was on Thursday and Friday nights, each with 6.0% of the drivers over 80 mg%, followed by Saturday with 5.4% and finally Wednesday with 4.7%. This is shown in Table 11.

Table 11 B.A.C. Distribution by Day

<u>B.A.C. mg%</u>	<u>% of Drivers</u>			
	<u>Wed.</u>	<u>Thurs.</u>	<u>Fri.</u>	<u>Sat.</u>
0-50	92.8	90.6	90.4	91.1
51-80	2.5	3.3	3.6	3.4
81-100	1.4	2.1	1.8	2.0
101+	<u>3.3</u>	<u>3.9</u>	<u>4.2</u>	<u>3.4</u>
	100%	100%	100%	100%

As the hour gets later the percentage of legally impaired drivers increases. Especially noticeable in Table 12 is that 12.8% of drivers on the road between the hours of 01:30 and 03:00 are over 80 mg%. This may in part represent people who are leaving bars and taverns after closing time. Bars and taverns do appear to increase as the origin of drinking drivers as closing time approaches. Of those drivers whose B.A.C. is between 50 mg% and 80 mg% and surveyed between 21:00 and 22:30, 15.2% were coming from bars or

taverns. Nineteen percent of drivers blowing over 80 mg% were coming from bars during this same time period. The percent of drivers in the same B.A.C. categories during the 01:30 - 03:00 time period who came from bars or taverns is 34.1% or 39.4% respectively.

Table 12B.A.C. Distribution by Time of Night

<u>Hour</u>	<u>B.A.C. mg%</u>			
	<u>0-50</u>	<u>51-80</u>	<u>81-100</u>	<u>101+</u>
21:00-22:30	95.7	1.7	0.9	1.7
22:30-24:00	94.1	2.2	1.4	2.3
24:00-01:30	89.2	4.4	2.2	4.2
01:30-03:00	81.1	6.1	3.8	9.0

Of all drivers aged 16-24, 4.5% blew over 80 mg%. This age range represented 33% of drivers stopped and 28% of all impaired drivers.

Table 14 B.A.C. Distribution by Age Group of Driver

<u>Age Group</u>	<u>B.A.C. mg%</u>			
	<u>0-50</u>	<u>51-80</u>	<u>81-100</u>	<u>101+</u>
16-24	92.3	3.2	1.6	2.9
25-29	88.2	4.2	2.3	5.3
30-34	90.7	2.9	1.9	4.5
35-39	88.7	3.8	2.3	5.2
40-49	91.8	2.7	1.9	3.6
50-59	93.9	2.6	1.2	2.2
60-69	95.8	2.2	0.9	1.1
70+	97.3	1.8	-	0.9

B.A.C. Distribution By Age and Sex

Table 13 shows that 6.3% of all males surveyed were over 80 mg% compared with 3.3% of all females surveyed.

Table 13B.A.C. Distribution by Sex of Driver

<u>B.A.C. (mg%)</u>	<u>% Drivers</u>	
	<u>Male</u>	<u>Female</u>
0-50	90.1	94.4
51-80	3.6	2.2
81-100	2.1	1.0
101+	4.2	2.3
	100%	100%

The percentage of males and females who were legally impaired is similar in the 16 to 24 age group; however, there is a noticeable difference between the sexes for the older drivers. Table 15 shows the breakdown of B.A.C. by age and sex. It can be seen that males account for a higher percentage of drinking drivers at all levels of B.A.C. in all age groups.

In Table 16, it appears that 16-18 year olds typically have a lower blood alcohol content than 19-24 year old drivers. Drivers between the ages of 16-18 represent 21.3% of drivers under 25 years of age, but 6.5% of impaired drivers under the age of 25.

The 25-29 and 35-39 year old age groups had the highest proportion of drivers blowing over 80 mg% (7.6% and 7.5% respectively). These two age groups represent 27.4% of all drivers, but 37.4% of legally impaired drivers.

Table 15 B.A.C. Distribution by Age
and Sex of Driver

Age Group	B.A.C. (mg%)			
	0-50	51-80	81-100	101+
Males				
16-24	91.9	3.2	1.8	3.1
25-29	87.0	4.7	2.6	5.7
30-34	89.0	3.3	2.4	5.3
35-39	86.6	4.6	2.9	5.9
40-49	89.8	3.4	2.3	4.5
50-59	92.6	3.3	1.4	2.7
60-69	95.1	2.3	1.2	1.4
70+	96.8	2.1	-	1.1
Females				
16-24	93.4	3.2	1.1	2.3
25-29	91.5	3.0	1.6	3.9
30-34	95.5	1.6	0.5	2.4
35-39	94.3	1.8	0.6	3.3
40-49	97.1	0.9	0.9	1.1
50-59	97.6	0.8	0.8	0.8
60-69	98.1	1.9	-	-
70+	100.0	-	-	-

Table 16 Distribution for Young
Drivers Disaggregated by Age

Age	B.A.C. (mg%)			
	0-50	51-80	81-100	101+
16	98.0	0.7	0.7	0.7
17	97.4	1.7	0.3	0.7
18	95.8	2.6	0.7	0.9
19	93.3	3.2	1.2	2.4
20	91.3	3.5	1.5	3.8
21	92.1	3.4	1.8	2.7
22	90.2	3.7	2.5	3.6
23	90.0	3.5	2.0	4.5
24	89.1	4.2	2.8	3.7
16-24	92.3	3.2	1.6	2.9

B.A.C. Distribution by Vehicle Type

Of the legally impaired drivers, 85.7% were in passenger cars, 11.8% in light trucks or vans, and 2.4% on motorcycles. Of all passenger car drivers 5.4% were above 80 mg% B.A.C. Similarly, 5.4% of motorcycle and 6.1% of light truck and van drivers exceeded this level. (See Table 17.)

Table 17

B.A.C. Distribution by Vehicle Type

Vehicle	B.A.C. mg%			
	0-50	51-80	81-100	101+
Passenger	91.4	3.2	1.8	3.6
Light				
Truck or Van	90.6	3.2	2.0	4.1
Motorcycle	87.8	6.4	1.0	4.4
Other	88.9	-	-	11.1

Estimates of Impairment**Table 18** Drivers' Estimates of Their
B.A.C. by Age Group and B.A.C.

Do You Think You Are Over
the Legal Limit?

Age Group	20-50		51-80		81+	
	Yes	No	Yes	No	Yes	No
16-24	2.9	90.3	11.3	81.2	25.1	73.3
25-29	3.0	88.9	10.3	85.1	28.0	66.9
30-34	3.7	88.8	4.9	90.2	27.2	67.4
35-39	0.7	85.2	8.3	79.2	26.6	69.1
40-49	1.8	90.2	2.2	82.6	20.2	71.3
50-59	8.7	82.4	15.4	84.6	17.6	76.5
60-69	2.6	81.6	10.0	90.0	11.1	77.8
70+	-	80.0	-	100.0	-	100.0

Drivers with a B.A.C. exceeding 20 mg% were asked whether they thought they were over the legal limit. Table 18 shows the responses broken down by age and B.A.C. category. The percentages do not sum to 100% due to missing data.

Although drivers that were legally impaired did tend to think they were impaired more often than other drinking but non-legally impaired drivers, a meaningful percentage did not. The legally impaired drivers either did not recognize that their B.A.C. was in excess of the legal limit, or would not admit it to the interviewer. The number of incorrect yeses in the 51-80 mg% group would seem to favour the former explanation.

Drivers were asked if they had had a drink in the last 10 minutes. If ``yes'' (152 drivers) they were asked to park for 10 minutes before being tested again.

All drivers were asked how many alcoholic drinks they had consumed in the last seven days. The drivers' answers varied from none to over 100.

Table 19 Number of Drinks in Seven Days

<u>No. drinks</u> <u>in last</u> <u>7 days</u>	<u>% Drivers</u>		
	<u>0 - 50mg%</u> <u>(n=11,059)</u>	<u>51-80mg%</u> <u>(n=393)</u>	<u>81+mg%</u> <u>(n=673)</u>
None	18.0	-	-
1-4	31.4	26.3	15.1
5-10	17.4	34.9	33.4
11-20	6.2	19.1	21.9
Over 20	6.0	11.5	14.4
NA/DK	<u>21.0</u>	<u>8.2</u>	<u>15.3</u>
	100%	100%	100%

Table 19 indicates that of those drivers who showed significant evidence of alcohol in the blood on the night of the survey, many had consumed upwards of five drinks in the last week. Specifically, of those

drivers who were above the 50 mg% level, more than 65% had consumed more than five drinks in the last seven days, and more than 30% had consumed greater than ten drinks in the last week. For drivers registering over 80 mg%, approximately 70% had consumed more than five drinks and about 35% over ten drinks in the last week. Some care should be taken interpreting these results as the number of drivers over 50 mg% is relatively small.

Drivers with B.A.C.s over 50mg%(n=1066)

Table 20 shows the location of drinking by sex for drivers whose B.A.C. is above 50 mg%. The data indicates a different pattern of drinking between males and females. The males being more likely than females to have been drinking in a vehicle and less likely to be drinking in a bar or tavern.

Table 20 Drinking Location by Sex

<u>Location where</u> <u>alcoholic beverages</u> <u>were consumed</u>	<u>% Drivers</u>			
	<u>50-80mg%</u>		<u>81+mg%</u>	
	<u>M</u>	<u>F</u>	<u>M</u>	<u>F</u>
Bar/Club/Tavern	26.1	35.2	30.9	33.3
Friend/Relative's	22.7	19.7	23.8	20.0
Own Home	13.4	8.5	15.1	13.3
Restaurant	7.8	7.0	5.0	5.7
Special Licence	6.5	7.0	5.3	5.7
In Vehicle	4.0	2.8	3.6	1.9
Other	11.5	11.3	9.8	7.6
DK/Refused	<u>8.0</u>	<u>8.4</u>	<u>6.8</u>	<u>12.4</u>
	100%	100%	100%	100%

Table 21 shows drinking location by age category. One-third of the 16-24 year olds do their drinking in a bar or tavern. A friend or relative's home is also a common drinking location for all age groups.

Table 21 Drinking Location By Age

Location Where
Alcoholic Beverages
had Been Consumed

<u>Age</u>	<u>Own Home</u>	<u>Friend or</u> <u>Relative's</u>	<u>In Vehicle</u>
16-24	12.5	24.6	1.6
25-29	14.3	27.8	4.5
30-34	11.3	22.6	4.5
35-39	16.9	20.4	4.2
40-49	14.2	13.5	5.0
50-59	20.0	16.7	3.3
60-69	5.3	31.6	-
70+	33.3	33.3	-

	<u>Restaurant</u>	<u>Bar/</u> <u>Tavern</u>	<u>Special</u> <u>Licence</u>
16-24	5.3	33.6	3.4
25-29	5.7	29.0	4.9
30-34	5.3	28.6	6.0
35-39	7.0	26.8	8.5
40-49	9.2	29.8	6.4
50-59	3.3	26.7	11.7
60-69	5.3	26.3	15.8
70+	-	-	-

	<u>Other/</u> <u>Don't Know</u>	<u>Total</u>
16-24	18.9	100%
25-29	13.8	100%
30-34	21.9	100%
35-39	16.2	100%
40-49	21.9	100%
50-59	18.4	100%
60-69	15.8	100%
70+	33.3	100%

Drivers were asked whether anyone had attempted to discourage them from driving that night. The data indicates that more males (6.8%) than females (3.4%) in the

legally impaired group felt an attempt had been made to discourage them, although 12% of females compared with 7.2% of males did not know or refused to say whether discouragement had been offered.

Ten percent of drivers under 24 years of age and exceeding the 50 mg% level felt an attempt had been made to discouraged from driving. Another 10% did not know or refused to answer. In the 25-39 age group 5.2% were discouraged and 7.3% did not know or refused to say. The respective numbers for the 40-59 year olds were 3.5% and 7.0%. Over 60 years no driver reported being discouraged from driving. It appears the older the respondent the less willing others were to discuss or discourage driving after drinking.

Trip

Drivers in the nighttime survey were questioned concerning the particular trip that they were on when stopped for the survey. The majority had come from their own or a friend or relative's home as indicated in Table 22.

Table 22 Origin of Trip

<u>Origin</u> <u>of Trip</u>	<u>% Drivers</u>					
	<u>0-50mg%</u>		<u>51-80mg%</u>		<u>81+mg%</u>	
	<u>M</u>	<u>F</u>	<u>M</u>	<u>F</u>	<u>M</u>	<u>F</u>
Own home	29.4	27.6	21.4	21.1	21.3	17.1
Friend/ relative's	23.0	25.5	28.3	19.7	30.7	36.2
Work	16.5	14.2	9.0	14.0	10.7	6.7
Restaurant	7.6	7.6	9.9	11.3	5.6	5.7
Recreation	7.2	6.7	9.9	4.2	8.2	5.7
Bar/tavern	4.2	5.3	11.1	24.0	13.7	17.1
Shopping/ meetings	3.4	4.1	3.4	1.4	2.0	3.8
Other	8.7	8.9	6.5	4.2	7.3	6.7
Refused/DK	<u>0.1</u>	<u>0.1</u>	<u>0.3</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	100%	100%	100%	100%	100%	100%

Table 22 indicates that the largest percentage of drivers above the 80 mg% level began his/her trip from a private home. Also, more women than men were coming from bars or taverns regardless of B.A.C.

Given the number of drivers with B.A.C. above 50 mg% who were coming from work it is unfortunate this category was not included as a drinking location.

Table 23 divides the drivers over 50 mg% into age groups by origin of trip. It would appear that young drivers (16-24 years of age) stopped in the survey were more likely to have come from a friend or relative's home, than their own home or a bar.

Independent of age, most people were coming from private homes. In the age categories 36-39 up to 50-59, approximately the same percentage of drinking drivers were coming from work as from bars or restaurants.

Table 23 Drivers Over 50mg%
Origin of Trip by Age

<u>Age</u>	<u>Own Home</u>	<u>Friend or Relative's</u>	<u>Work</u>
16-24	18.1	35.5	6.9
25-29	20.0	33.1	10.2
30-34	23.3	28.6	9.8
35-39	26.8	25.4	13.4
40-49	22.0	20.6	12.1
50-59	21.7	23.3	13.3
60-69	15.8	26.3	5.3
70+	-	33.3	33.3
	<u>Restaurant</u>	<u>Bar/Tavern</u>	<u>Recreation</u>
16-24	7.5	19.0	6.9
25-29	9.0	13.1	7.8
30-34	10.5	8.3	6.8
35-39	6.3	9.9	11.3
40-49	7.1	14.9	12.8
50-59	5.0	10.0	1.7
60-69	5.3	15.8	10.5
70+	-	-	-

	<u>Shopping/ Meeting</u>	<u>Other/ Don't Know</u>	<u>Total</u>
16-24	1.9	4.4	100%
25-29	1.6	5.3	100%
30-34	2.3	10.5	100%
35-39	12.0	9.6	100%
40-49	2.1	8.5	100%
50-59	8.3	16.7	100%
60-69	5.3	15.8	100%
70+	-	33.3	100%

The trip length was estimated by the driver and the response accepted in miles or kilometers. Table 24 indicates the majority of drivers (56%) were on trips of less than 10 kilometres, with 18% of those travelling an estimated one kilometre, and half travelling less than five kilometres.

In examining the length of trip by B.A.C. level, those drivers with B.A.C. over 80 mg% represented 5.5% of the trips 0-10 kilometres in length and approximately 4% of trips of other lengths, indicating that in any trip length there will be approximately similar numbers of those below 20 mg%, between 21 mg% and 80 mg%, and over 80 mg% B.A.C. levels

Table 24 Trip Distance

<u>Distance in Kilometres</u>	<u>% of Drivers</u>
less than 11 km	56.2
11 - 20 km	17.4
21 - 30 km	5.8
31 - 40 km	10.1
50 or more kilometres	10.5
	100%

Amount of Driving

In addition to being asked the length of the trip that evening (see Table 24) which had been interrupted by the survey, drivers were also asked the distance they had travelled in the previous seven days.

ERRATA

The 1986 Ontario Survey of Nighttime Drivers

Page 15. The fourth sentence from the bottom of the first column,

"In general, the majority of drivers did not"

should be omitted from the text. It is a duplicate of the first sentence of the next paragraph.

Approximately half the drivers (47%) drove 200 km or less during the time period. The distances are listed in Table 25.

Table 25

Distance Travelled in Last 7 Days

<u>Distance in Kilometers</u>	<u>% of Drivers</u>
less than 51 km	14.6'
51 -100 km	14.7
101-200 km	17.6
201-300 km	9.0
301+ km	<u>44.1</u>
	100%

Perception of Enforcement Levels

Everyone was asked "If 100 legally impaired drivers were on the road tonight, how many of them do you think would be stopped by the police for impaired driving?" The majority of drivers felt that 10% or fewer legally impaired drivers would be stopped by police in any one evening (Table 26).

Table 26

Enforcement Estimates by B.A.C.

% of Legally Impaired

Drivers Thought

<u>To Be Stopped</u>	<u>% of Drivers</u>		
<u>By Police</u>	<u>00-50 mg%</u>	<u>51-80mg%</u>	<u>81+mg%</u>
0-5	45.5	32.8	29.6
6-10	17.4	18.8	16.4
11-20	8.7	12.2	9.6
21-50	15.4	16.5	15.4
51-100	4.8	7.2	10.1
DK/NA	<u>8.3</u>	<u>12.4</u>	<u>18.9</u>
	100%	100%	100%

In general, the majority of drivers did not. The higher the B.A.C. of the respondent the greater was his/her estimate of the percentage of impaired drivers who would

be stopped by the police. Assuming higher levels of perceived enforcement indicates a perceived increased personal risk of being stopped, this may seem paradoxical. The drivers who were legally impaired felt they were more likely to be stopped than did other drivers yet they still drove. Also, the higher the B.A.C. the more people refused to answer this question.

In general, the majority of drivers did not anticipate much enforcement. This may reflect lower levels of police anti-drinking/driving campaigns and less media attention focussed on the issue relative to the winter months (December-January).

Seat Belts

One of the subjects of interest in this nighttime survey was the wearing of seat belts. Most seat belt usage surveys are conducted during the daytime. The last provincial seat belt survey conducted by M.T.C. was in May/June 1984, between the hours of 10:00-14:00. At this time 70% of drivers were found to be wearing seat belts.

Of the drivers stopped in the 1986 roadside survey, sixty-nine percent were observed to be wearing shoulder/lap belts, while 2.5% had lap belts only. Approximately 2% were judged to be using the belts incorrectly and less than 0.5% of vehicles (excluding motorcycles) were not fitted with seat belts. There was no difference with usage rates according to the day of the week.

Table 27 Seat Belt Usage by B.A.C.

<u>B.A.C. mg%</u>	<u>Wearing</u>	<u>Not Wearing</u>
	<u>Belt</u>	<u>Belt</u>
00-50	76.8	23.2
51-80	67.4	32.6
81+	52.6	47.4

1986 Nighttime Driver's Survey

The usage of seat belts declined dramatically as B.A.C. increased. Approximately three quarters of the drivers blowing less than 50 mg% wore seat belts, while only 52.6% of the legally impaired group wore belts.

Drivers who are legally impaired are more likely not to be wearing their seat belts than drivers under the legal limit. This may be a behavioural index of drinking drivers' increase in risk taking behaviour.

Table 28

Seat Belt Use by Driver Age Group

Age Group	Not Used	Shoulder/ Lap	Improper Use	Not Fitted
16-24	38.4	31.9	26.0	54.8
25-29	18.6	16.6	14.9	25.8
30-34	11.5	12.2	11.2	9.7
35-39	9.8	10.7	8.8	6.5
40-49	12.1	15.2	16.7	-
50-59	6.2	8.9	12.6	3.2
60-69	2.7	4.1	7.9	-
70+	<u>0.6</u>	<u>0.3</u>	<u>1.9</u>	<u>-</u>
	100%	100%	100%	100%

COMPARISON OF 1979 VS. 1986 ROADSIDE B.A.C. DATA

In 1979, the corresponding roadside B.A.C. data were:

Table 29

<u>1979 B.A.C. Levels</u>			<u>1986 B.A.C. Levels</u>		
B.A.C. mg%	No. of Drivers	% of Drivers	No. of Drivers	% of Drivers	
00-20	7,330	75.2	9,736	80.4	
21-50	1,127	11.6	1,323	10.9	
51-80	642	6.6	393	3.2	
81-100	183	1.9	221	1.8	
101-150	314	3.2	6.6% 278	2.3	5.5%
151+	<u>149</u>	<u>1.5</u>	<u>174</u>	<u>1.4</u>	
	9,745	100%	12,125	100%	

The most noticeable shift has occurred in the percentage of drivers between 51-81 mg%. Since 1979 a change has occurred allowing a 12-hour licence suspension for drivers within this category of B.A.C. It is possible that these people were light drinkers, or more cautious, and in 1986 were not as likely to be drinking and driving - the shift being to the under 20 mg% category.

NONRESPONDERS

In the 1979 survey 6.1% of the subjects failed to provide a breath sample. For 1986, 5.1% of all subjects refused to participate in the study. It is interesting to speculate on the effect these non-responders may have had on the results had they agreed to participate. In most cases (75%), some information was collected about the nonresponders, either due to the respondent beginning the interview and withdrawing consent later or because the information could be observed (i.e. time, sex, etc). In total 652 subjects of the 12,777 either refused to be interviewed (214) or refused to provide a breath sample (438). Some care must be taken while interpreting these results as 25-30% of the subjects are missing data for many of the variables.

The reasons given for refusal to participate in the study are shown in Tables 7 and 8. Of those people refusing to be interviewed 1.4% gave fear of prosecution as the reason. For those subjects refusing to provide a breath sample 10.5% refused for fear of prosecution. It is most likely that many or most of these individuals were drinking and possibly many were legally impaired. There is, unfortunately, no way to estimate the percentage who were actually legally impaired.

The refusal rates by the different study nights were: Wednesday, 25.5%; Thursday, 24.4%; Friday, 25.8%; and Saturday, 24.4%. Table 30 shows the refusal rates by time of day.

Table 30 Driver Refusal by Hour

<u>Time</u>	<u>No. Refused</u>	<u>No. Stopped</u>	<u>% Refusals by Time</u>
21:00-22:30	156	4005	3.9
22:30-24:00	188	3561	5.3
24:00-01:30	157	2949	6.9
01:30-03:00	<u>151</u>	<u>2262</u>	6.7
Total	652	12,777	

The refusal rates are not evenly distributed over the four time periods (Table 30.) A higher percentage refused to participate after 24:00 than before. These data indicate that rates of refusal were higher later at night, when the percentage of drinking drivers was higher.

The refusal rate by site population was similar to the distribution for all drivers stopped. Comparison of Table 31 and Table 2 shows the differences.

Table 31

Driver Refusal by Site Population

<u>Population (thousands)</u>	<u>No. Refused</u>	<u>No. Stopped</u>	<u>% Refusals by Time</u>
5-10	16	456	3.5
10-25	16	688	2.3
25-50	124	1649	7.5
50-100	82	2028	4.0
100+	382	7111	5.4
Unclassified	<u>32</u>	<u>845</u>	3.8
Total	652	12,777	

The distribution by sex is somewhat different for all drivers versus refusing drivers. In total, 72.7% of drivers

stopped were male, 26.0% were female and 1.3% were unclassified. For refusing drivers, 52.8% were male, (3.6% refusal) 24.8 were female (4.8% refusal), and 22.4% were unclassified. Some care must be taken interpreting these results due to the large number of unclassified refusing drivers.

The distribution of refusing drivers by age category is shown in Table 32. (See also Table 4.)

Table 32 Driver Refusal by Age

<u>Age</u>	<u>No. Refused</u>	<u>No. Stopped</u>	<u>% Refusals by Time</u>
16-24	106	4236	2.5
25-29	76	2146	3.5
30-34	56	1486	3.8
35-39	45	1295	3.5
40-49	94	1792	5.2
50-59	58	1039	5.5
60-69	28	476	5.9
70+	14	125	11.2
Missed	<u>175</u>	<u>182</u>	26.8
Total	652	12,777	

Again, care must be taken interpreting these data due to the large amount of missing information.

The breakdown of refusal rates by type of vehicle are as follows: car, 5.0%; light truck or van, 4.9%; motorcycle, 5.1%; other, 10.0%.

Table 33 shows the distribution of refusing drivers by origin of trip.

Table 33Driver Refusal by Origin of Trip

<u>Location</u>	<u>No. Refused</u>	<u>No. Stopped</u>	<u>% Refusals by Time</u>
Own Home	122	3540	18.7
Friend or Relative's	142	3076	21.8
Work	58	1919	8.9
Restaurant	38	960	5.8
Bar	34	675	5.2
Recreational	28	896	4.3
Shopping/ Meeting	18	440	2.8
Other	37	1083	5.7
Missing	<u>175</u>	<u>188</u>	26.8
Total	652	12,777	

It is intrinsically appealing to believe that many of the drivers refusing to be interviewed or provide a breath sample were drinking and may well have been legally impaired. With the exception of the sex breakdown, the data for refusing drivers suggest a slight tendency for refusal rates to be higher when the number of drinking drivers appears to be larger. There is unfortunately no way to fully assess the significance of the refusing drivers with regard to the percentage of impaired drivers in the survey.

CONCLUSIONS

Of the 12,125 drivers who participated in the 1986 Nighttime Driver Survey 5.5%, (673) had a B.A.C. in excess of the legal limit for blood alcohol concentration (over 80 mg%). An additional 3.2% (393) had a B.A.C. of 50 to 80 mg%, which may lead to a 12 hour licence suspension. In total, 8.7% (1066) of drivers had a B.A.C. at a level where legal intervention may be implemented, ranging from a 12-hour suspension to an impaired driving charge.

In regards to drinking per se, 19.6% of all drivers stopped had been drinking. A drinking driver is defined as any driver whose B.A.C. was in excess of 20 mg%. This level was used because the ALERT J4 has a potential error of up to 20 mg%. In other words, any B.A.C. level which was less than 20 mg% may represent testing error and not the presence of alcohol in the blood-stream; but a B.A.C. in excess of 20 mg% would indicate some alcohol in the blood-stream.

Drivers who had B.A.C.'s over 50 mg%

When comparing the four nights in the study, Thursday and Friday nights had the highest percentage of impaired drivers.

Percentage wise, males were more likely to be impaired than were females. This sex difference becomes more pronounced as the age of the driver increases. That is to say, the younger the driver the less likely it is that a difference exists between males and females in regards to drinking/driving behaviour.

The percentage of impaired drivers on the road increases as the night progresses. The increase is especially noticeable in the 01:30 to 03:00 time period. There is a similar increase in the percentage of people whose trip origin was a bar or tavern.

The majority of the vehicles stopped during the survey were passenger cars. Light trucks and vans were the next most common vehicles, followed by motorcycles and finally unclassified vehicles. Large trucks and buses were not stopped in this survey. Levels of driver impairment seemed similar across the different types of vehicles.

B.A.C. and Age

In any study of traffic safety, young drivers are of special interest. Within the 16-24 year old driving group, 16 to 18 year olds were not often impaired, 98% had a B.A.C. under 50 mg%. The percentage of impaired drivers by age of driver increases in a linear fashion from age 16 to age 24. While B.A.C. increases with age, the underage drinkers who drive may still be an important target for antidrinking/driving campaigns due to their over-representation in accidents. As some have speculated, this over-involvement may be the result of being inexperienced at both driving and drinking, making them potentially a greater problem, or, at least, a different type of problem than more experienced drivers.

The age categories with the highest percentage of impaired drivers were the 25 to 29 and 35 to 39 year olds.

Overall, the results found in the 1986 roadside survey are what would be expected based on accident statistics and previous research. This speaks to the representativeness of the sample used in this survey. In other words, profiles of the drivers in the sample approximate driver profiles compiled from other sources, suggesting that drivers in our sample are very much like all drivers during this time period.

Perceived B.A.C. and Driving

When drivers were asked if they thought they were in excess of 80 mg% the answers yielded two interesting results:

a) a large percentage of drivers were not very good at identifying whether they were over the legal limit (see Table 18.) They

either said they were over the limit when in fact they were not, or said they were under the limit when they were over.

b) a second, more troubling result is that a large number of people who believed themselves to be impaired, still drove a vehicle.

The first result may point to an area of public education which could be improved upon, that is teaching people how to assess their ability to drive after they have been drinking. An associated area would be educating people to identify when another individual should not drive. A potential danger is, by teaching people to correctly estimate their B.A.C., more drivers who would not have driven may be encouraged to do so. An associated problem is that by attaching special importance to specific B.A.C. values, it implies that values below the special values are of no importance: when in fact impairment begins with the first drink.

The second result suggests that there is still a lack of concern or awareness in regards to drinking and driving; at least during the months, days and hours during which the study was conducted.

In each of the three B.A.C. groupings (0-50, 51-80, 81+), approximately 50% of the drivers felt that the chances of an impaired driver being stopped by the police was less than or equal to 1 in 10. Approximately one-third felt there was a better than 1 in 5 chance of being stopped. This perception of enforcement level may result from decreased media attention on police enforcement and/or decreased media attention on the perils of drinking and driving, during the time period of this study. The results may have been very different if this question had been asked during the Christmas period. Perhaps

another focus of public awareness should be that drinking and driving is also a serious problem in the summer.

One interesting but somewhat paradoxical observation from the data was that the percentage of drivers surveyed with moderate B.A.C.'s has decreased from 1979, yet, it is drivers with the higher B.A.C.'s who felt the chance of being stopped by the police was higher.

B.A.C. and Location

The most common places for the origin of the trip were private homes and bars or taverns. Females showed a slightly higher tendency to have originated their trip from a bar or tavern than did the males.

The males had a slightly higher tendency to have done their drinking at a private home, while consistent with above, females tended to have been drinking in bars or taverns more often. The percentage of drinking drivers from a special licence event was higher for the over 50 year old driver relative to the under 50 year old driver, although overall the percentage of drivers coming from special events was low.

A number of drivers indicated that their trip had begun at their place of work. Unfortunately, this location was not included as a possible drinking location. It is not clear whether the drivers may be drinking at work or stopping off on the way home. Either way, this tendency may have implications for such countermeasures as server training and occupational health and safety programmes.

Nonrespondents

Nonrespondents are individuals who, for various reasons, did not participate in the study (see Table 7 and 8 for a more complete description). The distribution of driver characteristics is somewhat different for those drivers who did not respond compared with those drivers who did respond.

The nonresponse rate by time period, for example, indicates that a driver was more likely not to participate after midnight than before midnight. The rate of impaired drivers also increased after midnight.

There is a slight tendency for females not to respond more than males (4.8% compared to 3.6%); however, care must be taken in attaching any importance to this difference due to the large percentage of drivers unclassified as to sex. If the sex ratio of unclassified drivers is equal to the sex ratio of all drivers, the non-responding percentages by sex would be substantially altered.

It is impossible to know how many of the nonresponding drivers had been drinking or were legally impaired. However, a non-response rate of 5.1% is of some concern, especially when the rate of impaired drivers was 5.5%. If all of the nonresponding drivers, minus those who did not give a satisfactory blow or gave a medical reason for not blowing, were actually impaired then the percentage of impaired drivers on the road during the study period would be 6.8%. If the same percentage of refusing drivers were impaired as the participating drivers then the percentage of impairment would be unchanged (5.5%). The available evidence suggests that the real percentage is somewhere between these rates, most likely closer to the 6.8% than 5.5%.

Comparison with 1979

The sampling strategies and data collection procedures used in the 1986 study closely approximate those used in 1979; this was an experimental design decision made to increase confidence that any differences represent real change, and are not the result of variations in the data collection process, or of sampling strategies or sites.

For comparison purposes, only the results from drivers who completed the entire survey are used. Refusals were excluded from both the 1979 and 1986 results.

The percentage of refusals in the 1979 study was 6.1%. The percentage of refusals in the 1986 study was 5.1%. This is a statistically significant difference ($\chi^2_1 = 11.43, p < .005$). In 1979 6.6% of the 9,745 drivers stopped were over 80 mg% B.A.C., while 5.5% of drivers exceeded the same level in 1986. This 1.1% difference from 1979 to 1986 is statistically significant ($\chi^2_1 = 11.09, p < .005$). This reduction in the percentage of legally impaired drivers is consistent with the reduction seen in the number of drivers charged with drinking/driving offences, as well as a reduction in the percentage of alcohol related accidents over the same period. This provides additional evidence that some change has taken place since 1979.

In 1979 13.2% of the drivers surveyed exceeded 50 mg%. This figure was significantly reduced to 8.7% ($\chi^2_1 = 110.14, p < .0005$) in 1986. A comparison between the percentage of drivers in the 51-80 mg% category and the over 81 mg% category confirms that a significant decrease has taken place in the 51-80 mg% category from 1979 to 1986 ($\chi^2_1 = 39.88, p < .005$).

A number of developments have taken place between 1979 and 1986 which may have influenced this change. The law now allows for a 12-hour licence suspension for a B.A.C. between 51 and 80 mg%, whereas no such provision existed in 1979. The level of public awareness has increased as has the number of private citizen groups to combat drinking and driving. The police have increased the use of roadside breath testing equipment and the number of R.I.D.E. spot checks. Minimum penalties have increased including longer licence suspensions. The media has increased the attention focused on the drinking/driving issue, for both enforcement and consequences.

With regard to changes in the 51 to 80 mg% category from 1979, those in this category may have been moderate drinkers, and responded to the increased awareness in drinking and driving by moderating their drinking/driving behaviour; while the drivers with the higher B.A.C.'s may have been heavier drinkers and found it much more difficult to control their drinking and driving behaviour. In support of this hypothesis; there was a significant positive relationship between roadside B.A.C. and the self-report of the number of alcoholic drinks consumed in the 7 days prior to being stopped ($r = .22, p < .005$).

The summer months are when the attention on drinking and driving is at the lowest point. The R.I.D.E. programme is not as intensive, and public attention to the problem is reduced. Differences during this period may better represent an actual long-term change in driver behaviour, or attitudes, with regard to drinking and driving than periods when drinking and driving is seasonally reduced or media or public attention is causing a short-term reduction in the incidence.

Overall the results found in the 1986 Roadside Survey point out the value of this type of data collection. Only the gathering of on-road information can allow for development of risk of accident indicators. Accident statistics alone will not provide the complete picture. On-road data gives another indication of the effectiveness of countermeasure campaigns and the qualitative data provides insights for new campaigns.

Only through periodic collection of this type of data and by comparing it with other data sources, such as accident statistics, can a clear understanding and assessment of the drinking/driving problem be arrived at.

FOOTNOTES

- ¹ In August 1987 the name was changed to Ministry of Transportation.
- ² Reference: Stewart D. and Lawson, J.; "Results and Inferences from the 1986 Nigh-t-time Surveys of Drivers' Alcohol Use"; Road Safety and Motor Vehicle Regulation Directorate, Transport Canada.

